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ABSTRACT

Data from a variety of sources are used to examine enrollment and employment trends in public higher education. U.S. public institutions of higher education are charged with supplying much of the human capital that will power the economy and with filling the pipeline of qualified workers. Data suggest that there are several important "disconnects" that state colleges and universities must be prepared to tackle in their own academic pipeline building activities. Racial and ethnic diversity is becoming more of a challenge at each level of the academy, and significant disparities remain in participation of minorities at various levels of academe. The greatest diversity is found at the undergraduate level; "pipeline" fractures are especially evident at levels of campus leadership where racial and ethnic diversity continues to lag. The next decade will test the creativity and foresight of higher education leaders and policymakers alike as the reality of increasing racial and ethnic diversity meets the reality of economic restructuring and fiscal retrenchment. Attending to pipeline issues will be essential for public higher education if opportunity and success are to be articulated fully. (SLD)

Filling the Pipeline: A Look at Enrollment and Employment Trends in Public Higher Education

American Association of State Colleges and Universities

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Filling the Pipeline

A Look at Enrollment and Employment Trends in Public Higher Education

New Economy, New Challenges

The rapid emergence of a New Economy driven by knowledge and services is bringing unprecedented opportunities and challenges in virtually all aspects of American life. Perhaps nowhere are both the opportunities and challenges more acutely felt than on the campuses of our nation's public colleges and universities, which are charged with supplying much of the human capital that will power our economy and build and maintain our communities.

Meeting this human capital demand must be done in the context of campuses and communities that are becoming more racially and ethnically diverse. Over the next decade, the portion of the nation's adult population made up of racial and ethnic minorities will increase from just over one-quarter to nearly one-third. Much of this growth will occur among populations that have experienced serious challenges and disadvantages in their educational and economic experiences. Public higher education, as a leader in the *terra incognita* of the Information Age, will be expected to thoughtfully and proactively address the challenges of building and maintaining a human capital pipeline in a time of substantial demographic change.

The data that follow suggest that there are several important

"disconnects" that state colleges and universities must be prepared to tackle in looking at their own pipeline building endeavors. For example, how do institutions translate increasing diversity at the undergraduate level to the graduate level? What can be done to build diversity within the ranks of the academy or widen the path to institutional leadership?

Dissecting trend data and projections about what has happened and is likely to happen in higher education enrollment and staffing will be extremely important for the development of policies and programming that promote access and success throughout the campus community. Gathering and assessing the data is the easy part—acting on the data is where the challenge lies.

The Current View

Over the past decade, public four-year institutions have become more racially and ethnically diverse at the student, faculty, and leadership levels. Beneath the overall gains lie patterns that point to weak spots in higher education's human capital pipeline and bear further attention by university leaders and policymakers.

Racial and ethnic diversity becomes more of a challenge at each level of the academy. More specifically, one finds less diversity in moving from student/faculty to leadership ranks, where the pace

of diversification also appears to be slower. While this is perhaps not surprising to many in the higher education world, it is a pattern that should give pause, particularly in light of current and future changes in the student population.

Among minority groups, there are significant disparities in participation at various levels of academe. These disparities become especially pronounced when looking at demographic trends in faculty and university leadership. Greater emphasis should be placed on understanding the cause(s) of these disparities, and addressing them where possible.

The following findings boldly underscore the point that one of the most pressing—and potentially vexing—challenges for states and their colleges and universities in the years ahead will be to fortify the human capital pipeline to and through all areas of the campus community.

Students (undergraduate)

The greatest racial and ethnic diversity in state colleges and universities is currently found at the undergraduate level. In fall 2000, racial and ethnic minorities represented just over one-quarter (27.3 percent) of total undergraduate enrollment at public four-year institutions, which represents an increase of more than 7 percentage points over 1990 levels and essentially mirrors the

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**Table 1. Racial/Ethnic Distribution
of U.S. Adult Population, Public Higher Education 2000**

	U.S. Adult Population	Public Four-Year Institutions				
		Students (undergraduate)	Students (graduate)	Full-time Faculty	Exec./Admin./ Mgr. Staff	CEOs
African American	11.4%	11.2%	9.7%	4.8%	9.7%	11.0%
American Indian/Alaska Native	0.6%	1.0%	0.7%	0.5%	0.6%	1.0%
Asian/Pacific Islander	3.7%	6.5%	5.2%	7.2%	2.0%	2.2%
Hispanic	10.3%	8.6%	6.7%	3.8%	3.6%	4.6%
White	74.0%	72.7%	77.7%	83.8%	84.1%	81.0%

Sources:

- U.S. Census Bureau [adult population]
- U.S. Department of Education, Integrated Postsecondary Education Data System (IPEDS) [students, faculty, executive administrative/managerial staff]
- American Council on Education [CEOs]

minority share of the nation's adult population. The largest minority group among undergraduates is African Americans [see Table 1], but rapid growth among Hispanic and Asian/Pacific Islander students has significantly increased their relative shares of the minority student population [see Figure 1].

Students (graduate)

Moving beyond the baccalaureate level, diversity is on the rise, but not to the magnitude that it is being experienced at the undergraduate level or among the

population at large. In fall 2000, students from racial/ethnic minority groups constituted 22.3 percent of total graduate enrollment at public four-year institutions, an increase of approximately 8 percentage points over 1990 levels. Once again, African American students show the greatest presence at this level, but marked gains by other minority groups during the 1990s

helped to narrow the difference in relative share among the groups.

[see Table 1 and Figure 2]

The smaller minority share at this level and slower growth of that share relative to undergraduate enrollment combine to focus attention on a couple of key questions:

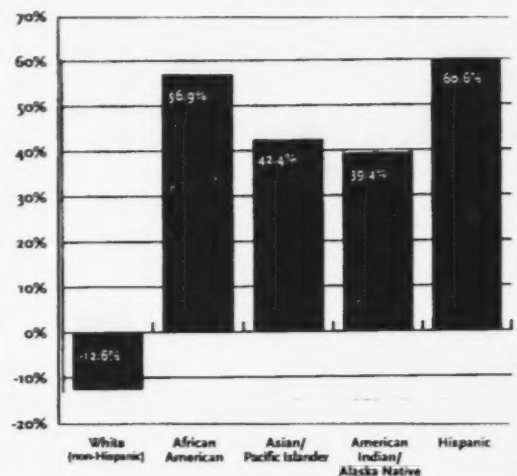
Are federal, state, system, and campus efforts to recruit graduate students working in concert or in competition with one another?

Are those recruitment efforts in step with current and emerging demographic realities?

Faculty

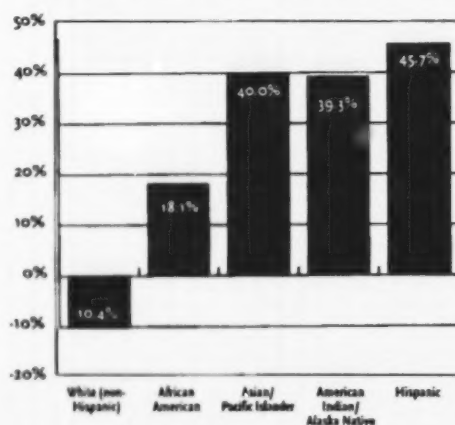
Cracks in the human capital pipeline become significantly more

**Figure 2. Change in Graduate Enrollment
at Public Four-Year Institutions
by Race/Ethnicity Fall 1990 to Fall 2000**



Source: U.S. Department of Education, National Center for Education Statistics

**Figure 1. Change in Undergraduate Enrollment
at Public Four-Year Institutions
by Race/Ethnicity Fall 1990 to Fall 2000**



Source: U.S. Department of Education, National Center for Education Statistics

Table 2. Racial/Ethnic Distribution of CEOs Public Four-Year Institutions by Institutional Type, 1990 and 1998

	Doctoral		Master's		Baccalaureate	
	1990	1998	1990	1998	1990	1998
African American	1.5%	7.3%	14.1%	16.9%	5.9%	15.6%
Asian/Pacific Islander	0.8%	0.7%	0.0%	2.9%	2.9%	0.0%
American Indian/Alaska Native	0.0%	0.0%	0.3%	0.8%	0.0%	1.6%
Hispanic	0.0%	0.7%	4.4%	5.0%	2.9%	7.8%
White	97.7%	91.2%	80.9%	74.4%	85.4%	75.0%
Other	0.0%	0.0%	0.3%	0.0%	2.9%	0.0%
Total	100.0%	99.9%	100.0%	100.0%	100.0%	100.0%

Sources: • American Council on Education, *1990 National Presidents Study*
 • American Council on Education, *The American College President 2000*

apparent in the transition from student to faculty ranks. At the full-time faculty level, diversity again slips relative to the general adult population and faculty ranks appear to be diversifying at a slower rate than the student population. Additionally, the participation of different minority groups changes substantially at this level. In fall 2000, racial/ethnic minorities made up just 16.3 percent of all full-time faculty at public four-year colleges and universities, an increase of just 2.4 percentage points from fall 1993 levels. Unlike the student population, Asian/Pacific Islander participation dominates the faculty ranks, spurred by strong growth relative to other groups during the 1990s. [see Table 1 and Figure 3]. As with graduate students, diversity trends at the faculty level raise pointed questions for campus leaders and policymakers:

How aggressively—and effectively—are minority students being recruited to the academic track, especially in relation to the professions?

What is being done to reach out to groups that represent a disproportionately small share of faculty (e.g. Hispanics)? Are

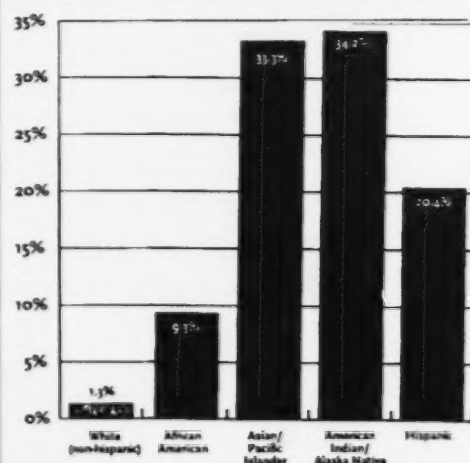
there model policies and programs that can be replicated and/or adapted?

Leadership (chief executives and administrators)

Pipeline fractures are similarly evident at the level of campus leadership, where racial/ethnic diversity continues to lag, and where the most pronounced differences among different minority groups are most in evidence. For executive/administrative/managerial positions at public four-year institutions*, racial/ethnic minorities comprised just 15.9 percent of all positions, an increase of less than 2 percentage points over a seven-year period. At the chief executive level, racial/ethnic minorities occupied 19 percent of the chief executive positions at

*Defined by the National Center for Education Statistics as "all persons whose assignments require primary (and major) responsibility for management of the institution, or a customarily recognized department or subdivision thereof."

Figure 3. Change in Full-Time Faculty at Public Four-Year Institutions by Race/Ethnicity Fall 1993 to Fall 2000



Source: U.S. Department of Education, National Center for Education Statistics

public four-year institutions in 2000, which represents a slightly larger gain over the period.

A comparison of racial/ethnic composition of faculty and leadership ranks reveals interesting departures from patterns established at the student level. For example, African Americans clearly prevail as the leading minority group among chief executives and campus administrators, but they significantly lag Asian/Pacific

**Table 3. Projected Change in Undergraduate Enrollment—Public Institutions
2000-2015 By State and Region**

State/Region	Total#	Total%	White#	White%	African Amer. #	African Amer. %	Asian/Pac. Islander#	Asian/Pac. Islander%	Hispanic#	Hispanic%
New England	55,152	13.5%	19,166	5.6%	8,866	31.4%	9,129	73.0%	17,991	68.7%
Connecticut	13,988	14.1%	4,063	5.3%	3,181	27.2%	1,942	66.6%	4,802	58.4%
Maine	1,712	4.3%	1,048	2.7%	28	14.0%	270	52.6%	366	76.9%
Massachusetts	28,111	15.6%	7,368	5.1%	4,957	35.0%	5,982	78.0%	9,804	72.4%
New Hampshire	5,001	13.3%	4,196	11.6%	108	29.0%	342	63.3%	355	67.4%
Rhode Island	5,165	15.1%	1,701	5.9%	526	31.0%	465	78.8%	2,473	78.9%
Vermont	1,175	6.7%	790	4.7%	66	66.7%	128	47.8%	191	71.0%
Mid East	186,210	12.3%	15,842	1.6%	50,543	17.9%	45,190	56.4%	74,635	42.8%
District of Columbia	3,372	27.9%	320	20.7%	2,033	22.4%	188	66.7%	831	70.1%
Delaware	3,552	11.1%	1,013	4.4%	1,652	23.7%	196	32.5%	691	62.0%
Maryland	38,205	18.4%	7,665	6.3%	16,489	26.6%	6,183	51.7%	7,868	68.2%
New Jersey	38,270	14.5%	2,389	1.4%	7,910	18.9%	10,298	59.9%	17,673	48.7%
New York	89,234	14.0%	7,608	2.1%	15,654	12.7%	23,911	58.0%	42,061	36.7%
Pennsylvania	13,577	3.7%	-3,153	-1.0%	6,805	17.3%	4,414	50.1%	5,511	56.5%
Great Lakes	75,049	4.0%	-15,419	-1.0%	31,425	13.2%	23,477	44.5%	35,566	41.3%
Illinois	41,112	8.6%	3,058	0.9%	7,365	9.8%	9,267	41.6%	21,422	44.6%
Indiana	11,395	4.8%	4,464	2.2%	2,716	11.6%	1,598	36.6%	2,617	38.2%
Michigan	10,502	2.3%	-7,268	-2.0%	7,930	11.6%	4,454	42.7%	5,386	35.2%
Ohio	6,420	1.5%	-9,229	-2.5%	9,039	16.1%	3,304	43.1%	3,306	37.2%
Wisconsin	5,620	2.4%	-6,444	-3.1%	4,375	30.8%	4,854	60.6%	2,835	40.5%
Plains	31,175	3.8%	-2,648	-0.4%	11,953	24.1%	9,844	43.3%	12,026	54.0%
Iowa	-2,863	-2.4%	-5,966	-5.3%	996	24.5%	991	37.6%	1,116	47.4%
Kansas	9,959	7.7%	3,178	2.9%	1,782	22.1%	1,231	30.4%	3,768	58.8%
Minnesota	11,441	5.3%	-1,769	-0.9%	4,058	46.9%	6,010	54.2%	3,142	60.6%
Missouri	12,538	6.1%	5,418	3.1%	4,096	16.5%	842	30.0%	2,182	51.8%
Nebraska	2,562	3.3%	-316	-0.4%	888	25.9%	477	40.8%	1,513	44.9%
North Dakota	-766	-2.2%	-1,271	-3.8%	105	20.4%	179	30.7%	221	49.7%
South Dakota	-1,696	-5.9%	-1,922	-6.9%	28	13.1%	114	28.4%	84	30.8%
Southeast	335,989	13.8%	131,428	7.8%	90,681	16.5%	25,628	46.5%	88,252	60.8%
Alabama	15,564	8.6%	10,584	8.1%	3,255	7.0%	764	34.5%	961	45.0%
Arkansas	3,023	3.4%	2,619	3.8%	-756	-4.3%	347	28.2%	813	56.2%
Florida	131,541	24.0%	37,181	10.8%	21,371	24.9%	5,501	42.4%	67,488	64.1%
Georgia	45,709	17.6%	18,580	10.9%	21,487	27.7%	2,809	45.7%	2,833	47.5%
Kentucky	944	0.7%	-1,156	-0.9%	952	7.3%	384	29.3%	764	39.4%
Louisiana	14,399	8.2%	2,548	2.3%	6,875	11.9%	1,936	45.4%	3,040	55.0%
Mississippi	3,221	2.7%	1,804	2.6%	462	1.0%	343	27.7%	612	37.5%
North Carolina	43,781	15.2%	25,331	12.4%	13,360	18.3%	2,545	47.4%	2,545	45.6%
South Carolina	18,323	13.7%	12,159	14.0%	4,101	9.5%	907	47.3%	1,156	52.2%
Tennessee	20,461	11.1%	11,715	8.2%	7,014	18.3%	711	34.5%	1,021	43.8%
Virginia	44,353	17.6%	16,116	9.1%	12,535	25.1%	9,100	59.0%	6,602	62.9%
West Virginia	-5,330	-7.9%	-6,053	-9.5%	25	0.9%	281	31.4%	417	58.8%
Southwest	275,675	20.6%	73,027	8.9%	35,365	26.0%	22,029	47.9%	145,254	43.4%
Arizona	45,155	19.7%	14,161	8.6%	2,061	23.2%	2,654	36.7%	26,279	55.2%
New Mexico	15,742	18.7%	3,078	6.8%	237	10.3%	433	34.4%	11,994	34.4%
Oklahoma	13,683	10.0%	4,874	4.3%	3,829	27.3%	1,529	39.2%	3,451	59.6%
Texas	201,095	22.6%	50,914	10.2%	29,238	26.4%	17,413	51.8%	103,530	42.0%
Rocky Mountain	49,753	11.0%	22,204	5.8%	3,264	25.5%	5,312	36.3%	18,973	48.6%
Colorado	26,398	12.9%	10,119	6.3%	2,537	25.7%	2,171	29.5%	11,571	44.1%
Idaho	4,861	8.4%	2,496	4.8%	113	19.4%	387	26.5%	1,865	59.4%
Montana	-912	-2.3%	-1,634	-4.3%	9	4.2%	170	44.4%	543	48.1%
Utah	15,428	13.0%	8,945	8.5%	563	29.9%	2,364	46.1%	3,556	58.9%
Wyoming	3,978	12.9%	2,278	8.2%	42	18.3%	220	71.0%	1,438	58.0%
Far West	746,699	33.9%	146,358	12.7%	27,011	19.0%	258,817	68.0%	314,513	59.9%
Alaska	6,335	25.6%	1,935	9.9%	326	20.0%	2,926	174.2%	1,148	63.3%
California	645,767	39.1%	109,714	14.8%	22,781	18.9%	225,011	73.9%	288,261	59.4%
Hawaii	15,358	28.0%	1,155	8.8%	134	10.6%	11,899	33.0%	2,170	50.6%
Nevada	10,479	14.7%	995	1.9%	1,244	22.6%	1,519	40.0%	6,721	68.7%
Oregon	19,675	13.1%	9,530	7.4%	730	20.1%	3,963	42.3%	5,452	65.1%
Washington	49,085	19.9%	23,029	11.8%	1,796	18.8%	13,499	53.3%	10,761	69.1%
Totals	1,755,702	15.9%	389,958	5.2%	259,108	18.0%	399,426	60.1%	707,210	52.3%

Source: Educational Testing Service (AASCU calculation of state/regional totals)

Note: Includes 2-year and 4-year enrollments.

Islanders in terms of representation at the faculty level. For their part, Asian/Pacific Islanders are well-represented among students and faculty in relation to their share of the general population, but are markedly less present among campus leadership. Hispanics are similarly underrepresented at the leadership level, but also among faculty. [see Tables 1 and 2; Figure 4]

Trends in this area give rise to still more challenges for higher education leaders and policymakers, including:

The need to probe, through research and candid dialogue, the differences in participation among minority groups at various levels of the academy. Can they be explained by institutional factors? By cultural factors? By a combination of these and other factors?

The need to carefully examine—and re-examine—the array of paths to campus leadership, focusing attention on those that may contribute to a more diverse leadership community; and

The need to continue and expand programs such as AASCU's Millennium Leadership Initiative, emphasizing outreach to groups that are particularly underrepresented among campus CEOs and senior administrators.

Looking Ahead

The next decade will severely test the creativity and foresight of higher education leaders and policymakers alike, as the reality of increasing racial and ethnic diversity meets the reality of economic restructuring and fiscal retrenchment. Nowhere will this be more apparent than at the nation's

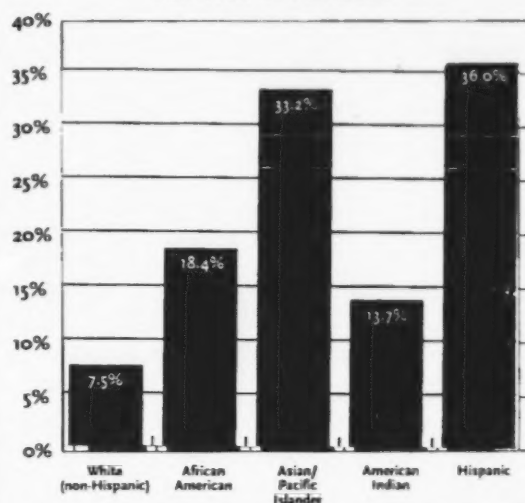
state colleges and universities, where an influx of students from first-generation and other historically disadvantaged backgrounds will seek the promise of a postsecondary degree. In view of those realities, institutions ability to strengthen their pipelines will depend in no small part on new approaches and collaboration with a wide range of partners on issues such as recruitment and retention, whether for students, faculty, or leadership.

According to the Educational Testing Service, enrollment at public two- and four-year institutions is projected to increase by 1.76 million students between 2000 and 2015, and more than three-quarters of that increase (just under one million students) will be comprised by students from racial/ethnic minority groups. During this period, the largest numeric growth will occur among Hispanics (increase of 707,210 students), while Asian/Pacific Islanders will post the largest percentage gains [see Table 3]. Enrollment growth is expected to be most intense in the West and South, with more than half of the projected growth concentrated in three states—California, Florida, and Texas.

The Bottom Line

The pipeline imagery is especially apt for discussing racial/ethnic diversity in higher

Figure 4. Change in Executive/Administrative/Managerial Staff* at Public Four-Year Institutions by Race/Ethnicity Fall 1993 to Fall 2000



Source: U.S. Department of Education, National Center for Education Statistics

*Defined as "all persons whose assignments require primary (and major) responsibility for management of the institution, or a customarily recognized department or subdivision thereof."

education at this point in history, as the steadily increasing "flow" of racial and ethnic minorities will increasingly reveal points of stress or leakage in our postsecondary system. For policymakers and university leaders, the critical tasks will be to pinpoint areas of stress or breakdown in system and institutional pipelines, carefully assess the cause(s) of those stresses and breakdowns, and develop policy and/or programming to address them.

This will be no small order, especially for colleges and universities in states that are experiencing dramatic enrollment growth and serious fiscal strain. Attending to pipeline issues will be absolutely necessary if opportunity and success are to be fully articulated and recognized at the universities in the New Economy.

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